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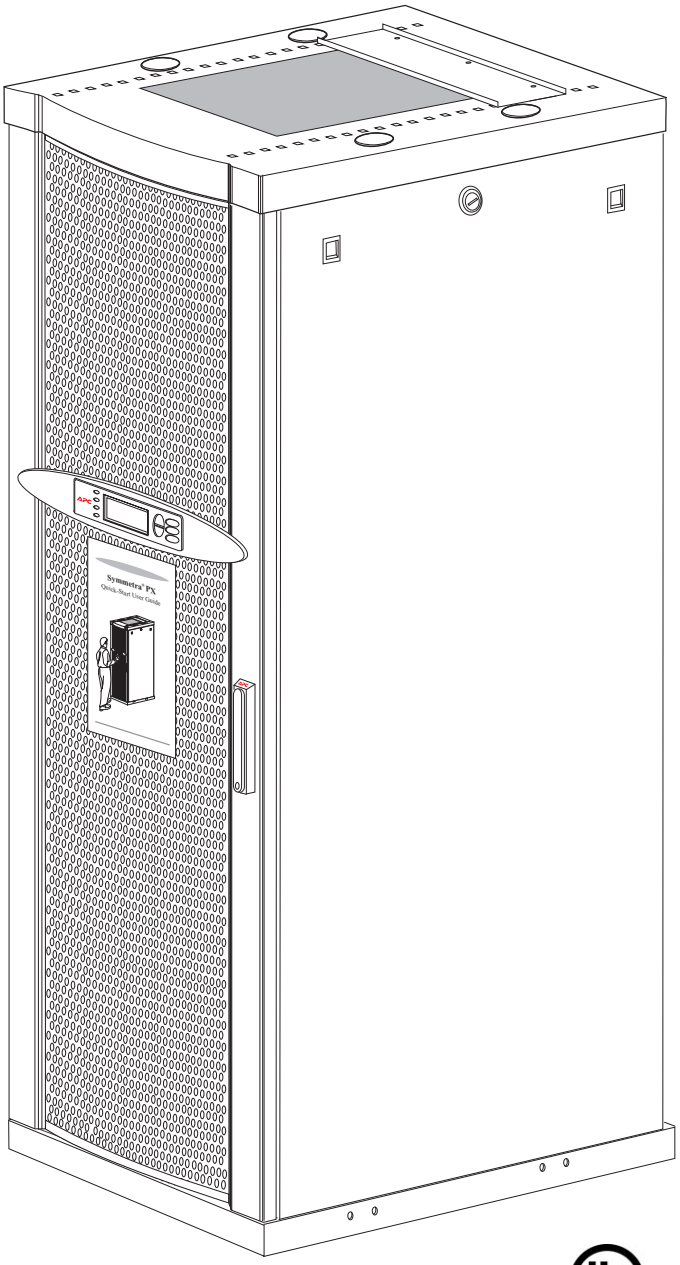
# Symmetra PX UPS

10-40 kW
208 V

## Operation and Maintenance Guide

# Symmetra® PX
# 10-40 kW 208V

# Operation And Maintenance Guide

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# IMPORTANT SAFETY INSTRUCTIONS

## SAVE THESE INSTRUCTIONS

This guide contains important instructions that should be followed when handling the UPS, Battery Enclosures, and Batteries.

### Symbols used in this guide

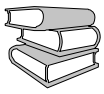
**WARNING!**
**Risk of electric shock.**

**CAUTION!**
Read this information.

Indicates important information.

Indicates a heavy load that should not be lifted without assistance.

Indicates that more information is available on this subject in a different section of this manual.




Indicates that more information is available on the same subject in a different manual.

### ON, OFF & STAND-BY switch positions

Indicates that a switch or current protection device is in the ON position.

Indicates that a switch or a breakeris in the OFF position for.

Indicates that a switch is in the STAND-BY position.

## Weight symbols

| | | | |
|---|---|---|---|
| | | | |
| <40 lb | 40 - 70 lb. | 70 - 120 lb | >120 lb |

## Operation safety

**WARNING!**

**- Hazardous electrically-charged parts inside the UPS are energized from the battery supply even when the AC power is disconnected. Follow Total Power Off procedure to completely de-energize the system.**

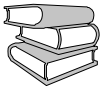
**- Remove all conductive jewelry such as chains, watches, and rings before handling the Battery Units.**

**- Battery Units do not contain serviceable parts. Do not open.**

**- Do not dispose of Battery Units in a fire, as they may explode. Do not mutilate Battery Units, as released electrolyte is harmful to the skin and eyes and may be toxic.**

**WARNING!**

**After the UPS has been electrically wired, do not start it up. Start-up is commissioned to APC-authorized personnel only.**



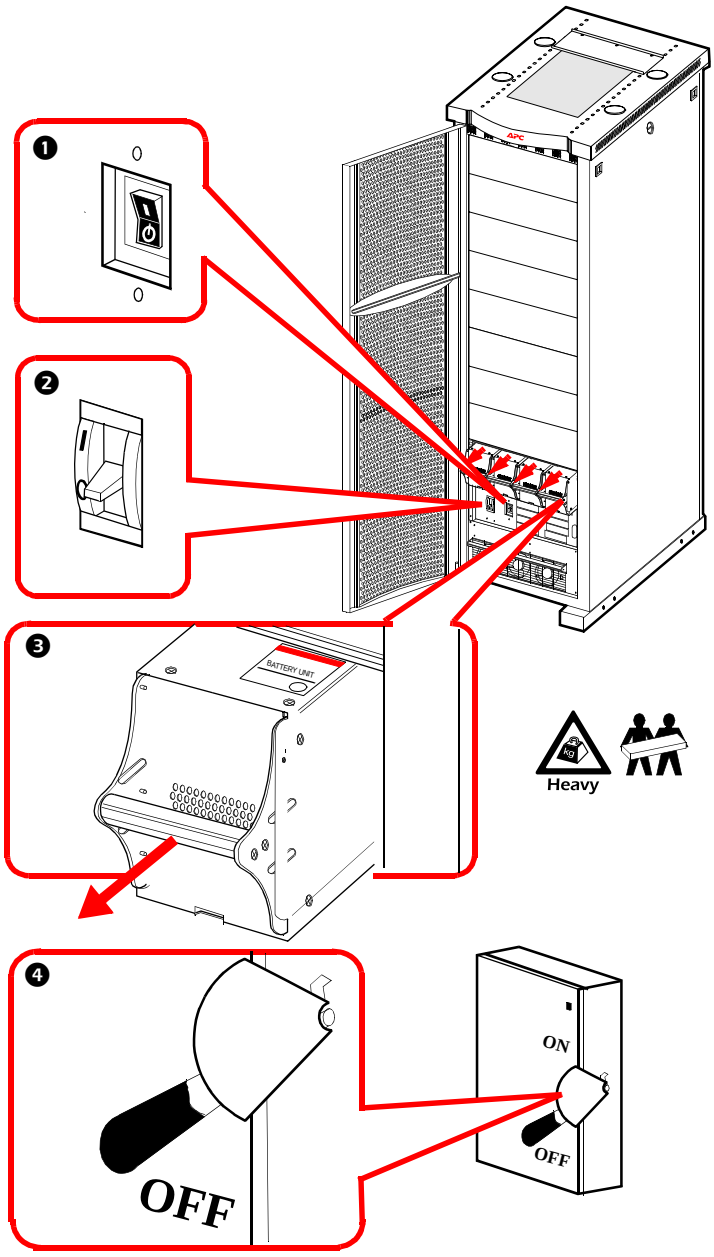
See also

For configurations including customer-supplied external batteries, refer to manufacturer’s battery installation and maintenance instructions.

## Total Power OFF procedure

**WARNING!**

**Before electrical installation begins, verify that the UPS is in the Total Power Off mode by following this procedure.**




❶ Set System Enable Switch to the STAND-BY position.

❷ Set DC Disconnect to the OFF position.

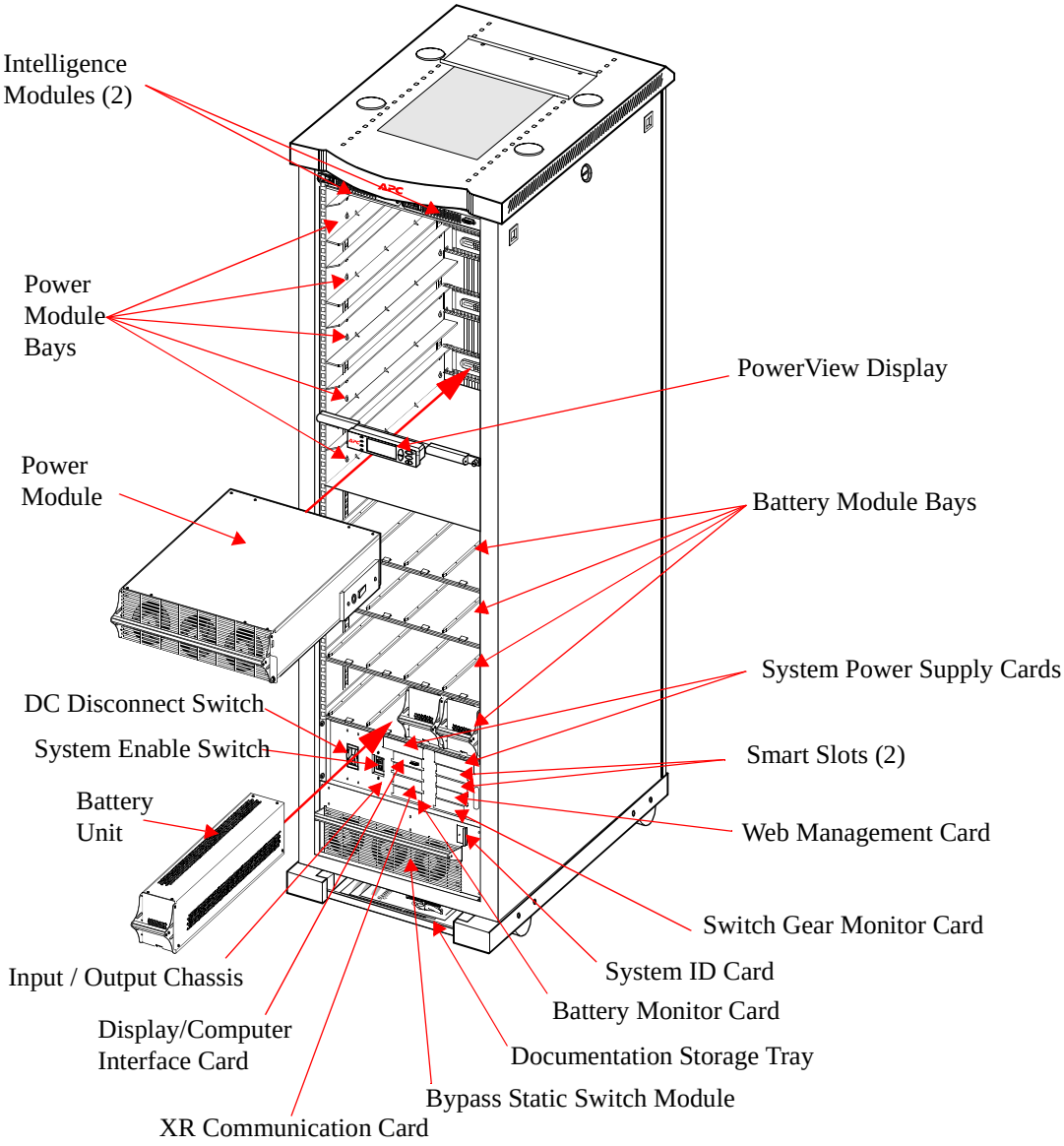
❸ Disconnect ALL Battery Units by removing or pulling out to Red Disconnect Line

**CAUTION!**

To ensure solid stability, do not pull Battery Units out beyound the Red Disconnect Line unless completely removing them from the UPS.

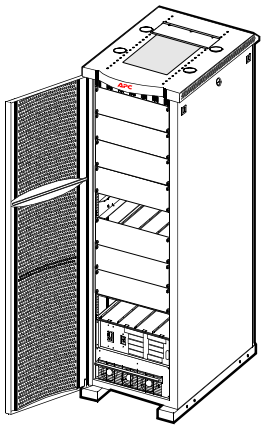
❹ Set utility power to the OFF or LOCKED OUT position.

# Overview of System Components

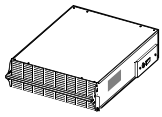


## Weights

UPS (empty)
600 lb. (275 kg)



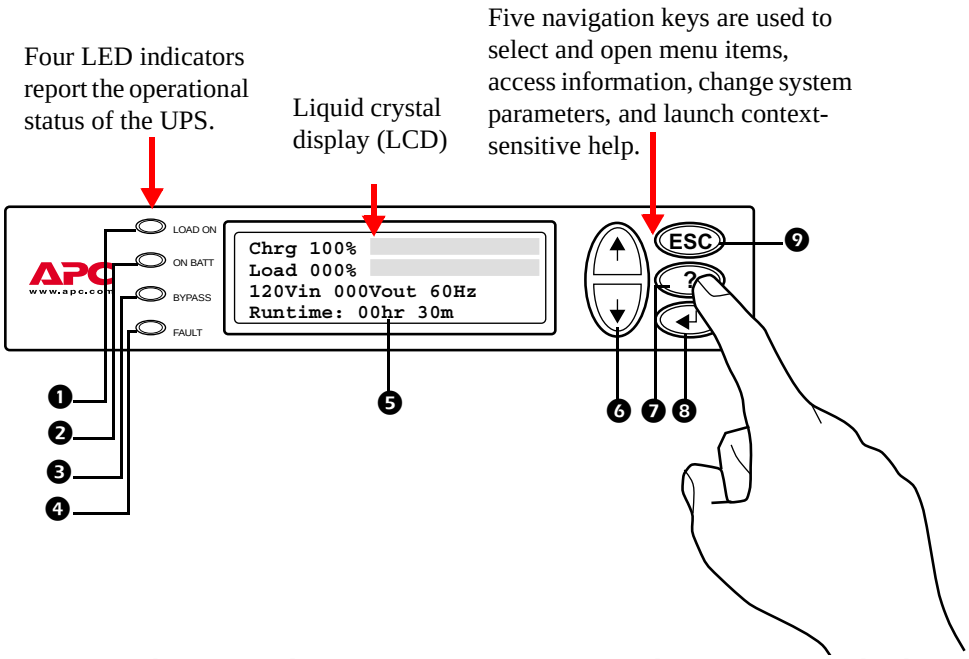
Power Module
60 lb. (26 kg)



Battery Module
4 x 50 lb. (4 x 23 kg)

# Operation

The PowerView is the user control interface to the UPS. It is used to configure and monitor the system, set alarm thresholds, and provide audible and visual alarms.




❶ LOAD ON LED - When green, the Symmetra PX UPS is providing power to the load equipment.

❷ ON BATT LED - When yellow, power is flowing from the batteries to the Power Modules.

❸ BYPASS LED - When yellow, power to the load is being supplied through the Bypass Static Switch.

❹ FAULT LED - When red, a fault condition exists.

❺ LCD - Display alarms, status data, instructional help, and configuration items.

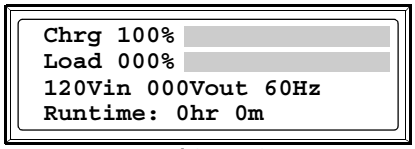
❻ UP and DOWN navigation keys - Selects menu items and accesses information.

❼ ENTER key - Opens menu items and input changes to system parameters.

❽ HELP key - Launches context-sensitive help.

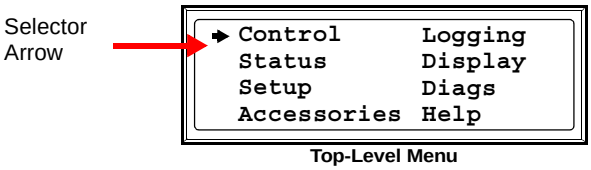
❾ ESC key - Returns to previous screen displayed.

Press **ESC** (ESC) until you get to the **Top-Level Status Screen**, which provides you with basic system status information.



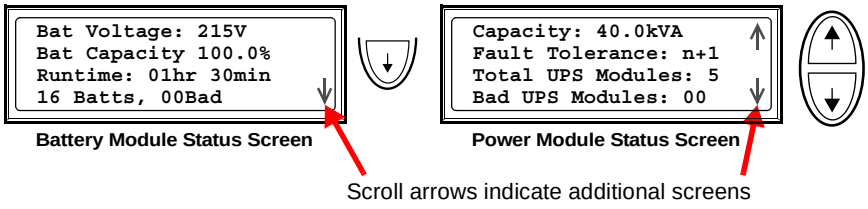

**Top-Level Status Screen (factory default)**

Press **Enter** (↵) to open the **Top-Level Menu** screen. This screen is the **launching pad** to command, configure, and monitor the system.

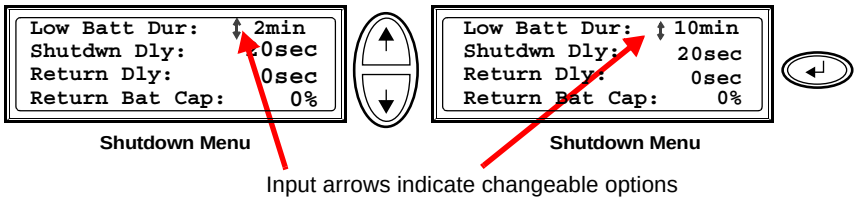



**Top-Level Menu**

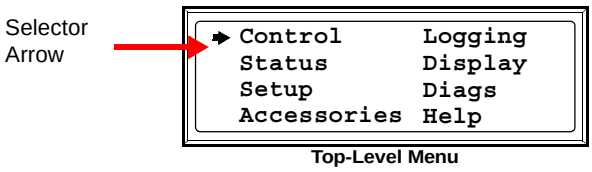
Press **Up and Down** (↓) (↑) to navigate the selector arrow and view all sub-menu screens.




Press **Up, Down** (↓) (↑) and **Enter** (↵) to move input arrow to select and enter information.



## Control functions




**Top-Level Menu**

Turn load on/off:

**Control Sub-Menu** **Load Off Screen**

Turn into/out of bypass:

**Control Menu** **Bypassed Screen**

Additional control functions:

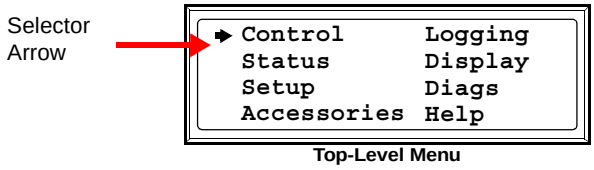
| | |
|---|---|
| **Do Self Test** | Initiate a system of self-tests and diagnostics |
| **Simulate Power Fail** | Simulate a power failure |
| **Graceful Reboot** | Turn off and start load equipment correctly |
| **Graceful Turn Off** | Shut down load equipment correctly |
| **Start Runtime Cal** | Begin runtime calibration of the UPS |

## Control screen

From the Control screen, you can select the following items:

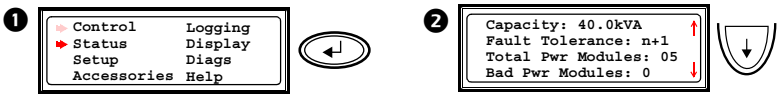
| | |
|---|---|
| **UPS into Bypass** | Place into or return from maintenance bypass operation |
| **Do Self Test** | Initiate a system of self-tests and diagnostics. |
| **Simulate Power Fail** | Simulate a power failure |
| **Graceful Reboot** | Turn off and start load equipment in an ordinary manner. |
| **Graceful Turn Off** | Shut down load equipment in an orderly manner. |
| **Start Runtime Cal** | Begin runtime calibration of the UPS. |
| **Turn Load On/Off** | Apply power to or shut down the UPS |

## Status functions



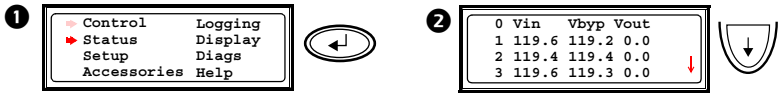

**Top-Level Menu**

Verify general module status:



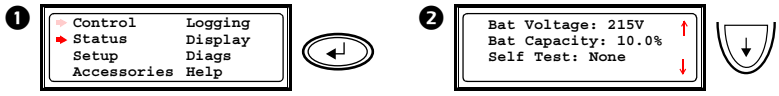

**Top-Level Menu** **Sub-Sub-Sub Status Screen**

Verify voltage on all phases:




**Top-Level Menu** **Status Screen**

Verify battery voltage/capacity:




**Top-Level Menu** **Sub-Sub Status Screen**

**Note**

Allow a 24-hour battery recharging period after system start-up/battery replacement for battery monitoring data to become fully reliable.

## Status screens

The status screen display information regarding load, battery, power module voltage, and current.

### Status screen 1.

**Vin, Vout, Iout** The input voltage (V), output voltage (V), and output current (A) for each phase (1-3).

### Status screen 2.

| | |
|---|---|
| **%load assuming no redundancy** | Percentage of the load in relation to the total capacity of all power modules. |

### Status screen 3.

| | |
|---|---|
| **%load allowing for n+ redundancy** | Percentage of the load, allowing for the redundancy in your system. |

### Status Screen 4.

| | |
|---|---|
| **Frequencies** | The input and output frequency in hertz (Hz). |

### Status screen 5.

| | |
|---|---|
| **Batt Voltage** | Actual voltage of the DC bus (volts). |
| **Batt Capacity** | Percentage of battery capacity available. |
| **Runtime** | The available runtime for battery operation in hours and minutes. |
| **#Batts** | The number of installed battery modules. |
| **#Bad** | The number of failed battery modules. |

### Status screen 6.

| | |
|---|---|
| **Capacity: kVA** | The system load capacity. |
| **Fault Tolerance** | The configured redundancy for your UPS (n+0, n+1, n+2...). |
| **Total Pwr Modules** | The number of power modules installed. |
| **Bad Pwr Modules** | The number of failed power modules installed. |

### Status screen 7.

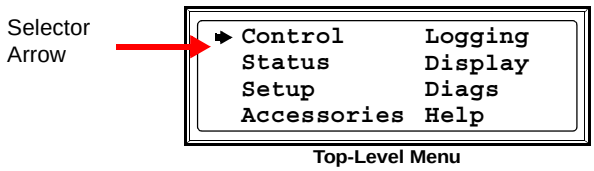
| | |
|---|---|
| **Alarm Thresholds** | Settings configured for the thresholds that trigger alarms. |
| **Fault Tolerance n+0** | The alarm threshold for reduced redundancy. |
| **Runtime hr min** | The alarm threshold for reduced runtime. |
| **load: kVA** | Alarm indication of exceeded load. |

### Status screen 8.

| | |
|---|---|
| **Self Test** | Status of the last self-test. |
| **Lst Xfr** | Information on the last transfer to battery operation. |
| **Status** | General UPS status. |
| **IM** | Status of the main intelligence module. |
| **RIM** | Status of the redundant intelligence module. |

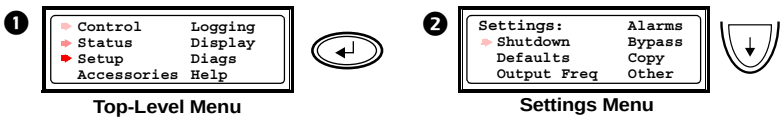
## Set-up functions

Display parameters are set to factory defaults.




Top-Level Menu

Changing factory default settings:




Top-Level Menu Settings Menu

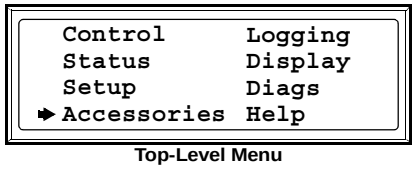
## Set-up screens

From the Setup screen, you can select the following:

| | |
|---|---|
| **Shutdown** | Configure the following system shutdown conditions:<br><br>**Low Batt Dur:** Low battery duration is the time from low battery signal to the shutdown of the load. This signal is sent to the server using shutdown software (PC + PCNS).<br><br>**Shutdwn Dly:** Shutdown delay is the time from when the UPS receives a shutdown command (usually sent by a server) to the shutdown of UPS power to the load equipment. This delay allows load equipment to finish shutdown processes.<br><br>**Return Dly:** Return delay is the amount of time the UPS needs to turn on after a power outage has ended.<br><br>**Return Bat Cap:** Return battery capacity is the minimum percentage of battery capacity required for the UPS to turn the load on. |
| **Defaults** | Return all UPS settings to their default values. |

| | |
|---|---|
| **Output Frequency** | Set the desired output frequency |
| **Alarms** | **Redundancy:** The state of redundancy that will trigger an alarm. Choices are:<br>• N+0 – an alarm will occur only when there is more load than all functioning power modules can support;<br>• N+1 – an alarm will occur when there are no spare power modules in good condition;<br>• N+2 – an alarm will occur when there is only one functioning power module.<br><br>**Load:** When the load is greater than this threshold, an alarm will sound.<br><br>**Runtime:** When the UPS time duration for powering the load is less than this threshold, an alarm will sound. This alarm is the result of an increase in load or a decrease in battery capacity. |
| **Bypass** | Set the conditions in which the UPS will automatically go into bypass operation. |
| **Copy** | Copy the UPS settings. |
| **Other** | **Self Test:** Set the UPS to perform a self-test automatically at periodic intervals.<br><br>**USP ID:** Type in a unique name for the UPS.<br><br>**Vout Reporting:** Set the reporting to the number of the tap to which the most significant load is wired on the output transformer.<br><br>**Output:** Set the UPS output voltage.<br><br>**BatFrAmpHour**: Set the Ampere-Hour rating of external battery enclosures that are not APC Symmetra PX Battery Enclosures. |

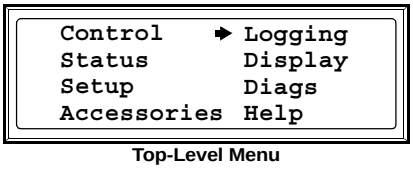
## Accessories screen




**Top-Level Menu**

From the **Accessories** screen, you can view the status of APC accessories connected to the UPS.

## Logging screen

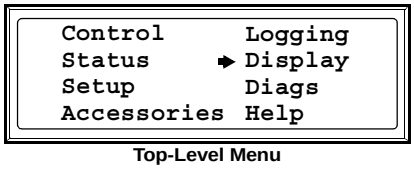



**Top-Level Menu**

The Logging screen allows you to customize the UPS log. The following items are accessible from this screen:

| | |
|---|---|
| **View Log** | Point to an entry in the log and press the Enter key to view a description of the event. The display logs the most recent 64 events. |
| **View Statistics** | View statistics of the events logged. |
| **Configure Logging** | Set the type of events that are recorded in the log. To log a type of event, choose **On**. |
| **List Event Groups** | • View the list of event types.<br>• Power Events<br>• UPS Control Events<br>• User Activities<br>• UPS Fault Events<br>• Measure UPS Events<br>For each group, press the Enter key to display the individual events listed under the group. |
| **Clear Log** | Clear all events currently stored in the log. |

## Display screens



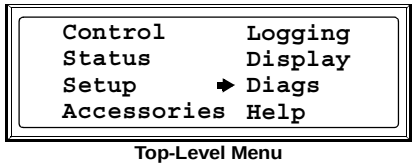

**Top-Level Menu**

The Display screens allow you to customize the UPS display interface. The following items are accessible from this screen:

| | |
|---|---|
| **Date** | Set the correct date (day:month:year) and time (hour:minute). |
| **Password** | Protect the password against unauthorized configuration changes. |
| **Information** | View the model number, serial number, date of manufacture, and revision number of the display interface. |
| **Beeper** | Configure the audible alarm interface.:<br>At UPS<br>At Disp<br>Vol<br>Click |
| **Contrast** | Set the contrast on the LCD. |

**Config** Personalize the Top-Level Status screen. Choose each line you want displayed from a list of options. To change a line, move the selection arrow to the line you want to change and press the ENTER key. Scroll up or down the list to find the data you want displayed and press the ENTER key to save your changes. Press the ESC key to discard your changes.

## Diag screens




Top-Level Menu

The Diagnostic screens provide information used in troubleshooting. The following items are accessible from this screen:

**Fault & Diagnostics** Lists any failures found.

If any status except ON or OK is displayed, a module or card must be replaced. The Faults and Diagnostics screen will describe the location of the failed module/card. If you do not have a redundant intelligence module installed, you must place the UPS in bypass operation before you remove an intelligence module.

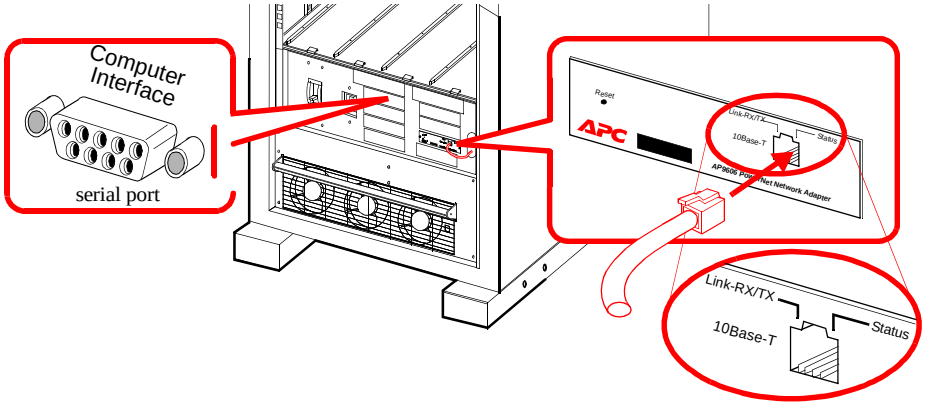
Lists external device status.

If any status except ON or OK is displayed, a module, card or battery must be replaced. If you do not have a redundant intelligence module installed, you must place the UPS in bypass operation before you remove an intelligence module.

## Help screens

To access the display interface context-sensitive Help screens, press the ? key.

## Network connection/APC Web Management Card



Note

Network Cable not supplied with unit.

## *Quick configuration*

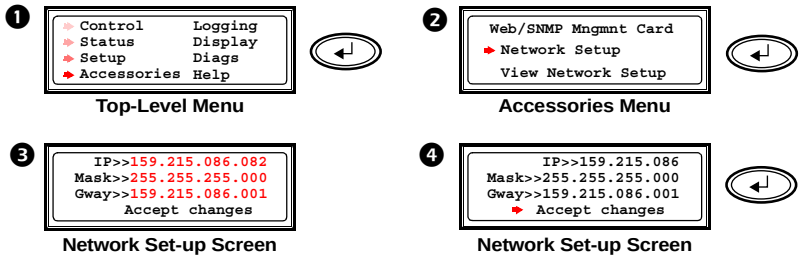
Note

Disregard the procedures in this section if you have an APC InfrastruXure Manager as part of your system. See the InfraStruXure Manager's documentation for more information.

You must configure three TCP/IP settings before the Management Card can operate on a network:

- IP address
- Subnet mask
- Default Gateway

From the PowerView Display:




Note

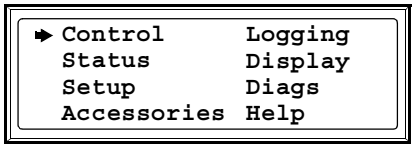
If a Default Gateway is unavailable, use the IP address of a computer located on the same subnet as the Management Card that is usually running. The Management Card uses the Default Gateway to test the network when traffic is very light. See "Watchdog Features" in the "Introduction" of the Network Management Card User's Guide CD (*.\doc\usrguide.pdf*) for more information about the watchdog role of the Default Gateway. The Management Card User's Guide CD is located in the documentation storage tray.

# Maintenance Bypass Operation for Installations with Optional MBP

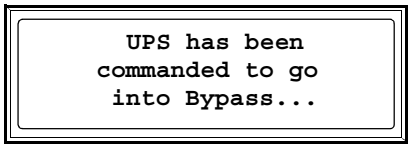
### How to place the UPS in Maintenance Bypass operation

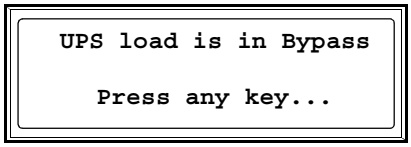
Before servicing the UPS, place the UPS in Maintenance Bypass operation. When the UPS is operating in Maintenance Bypass operation, power flows directly from the utility to the Maintenance Bypass Panel and out of the load equipment.

1. Use the UPS display interface to place the UPS in Maintenance Bypass operation:
   a. Press the Esc key on the Monitoring screen to open the Main menu.
   b. Select **Control** on the Main menu and press the Enter key.




   c. Select **UPS into Bypass** on the Control menu and press the Enter key.
   d. Confirm the selection on the next screen: Select **Yes, UPS into Bypass** and press the Enter key. The BYPASS LED will illuminate and the display will show the following two screens:

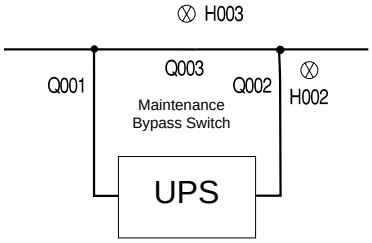



Note

The H3 LED above the Q3 Breaker should then illuminate, indicating that it is safe to operate the Q3 breaker.

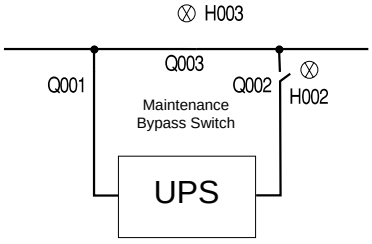
2. Close (turn ON) the Q3 Breaker on the Maintenance Bypass Panel.



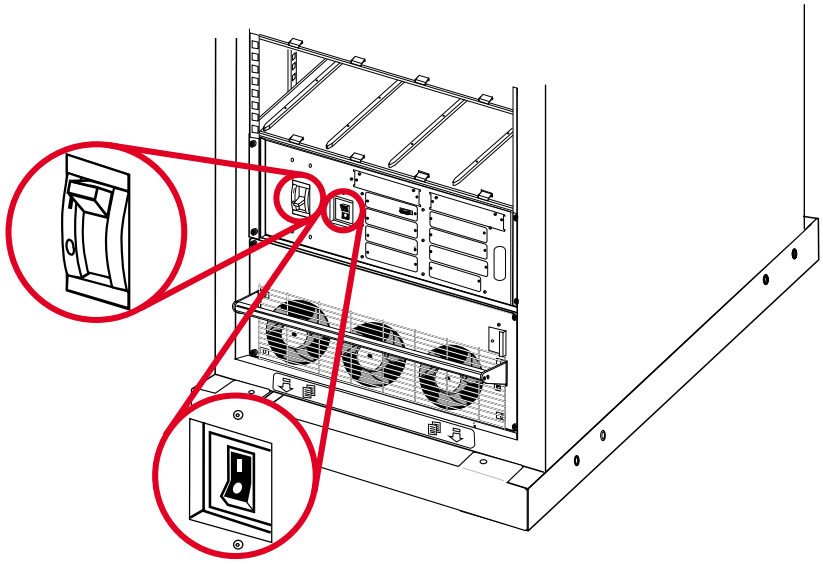

**Note**

The H2 LED above the Q2 Breaker should then illuminate, indicating that it is safe to operate the Q2 breaker.

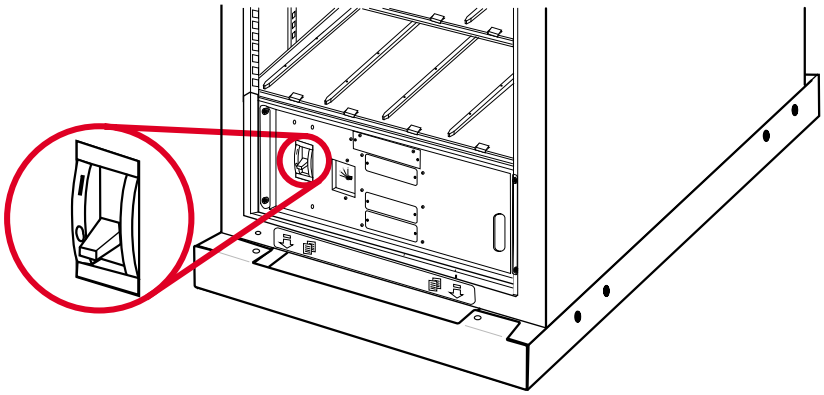
3. Open (turn OFF) the Q2 Breaker on the Maintenance Bypass Panel.



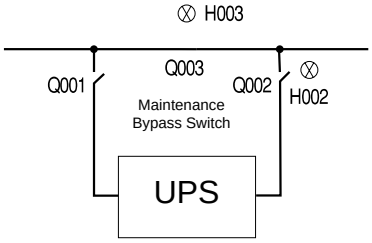

4. Set the Symmetra PX UPS System Enable Switch and DC Disconnect Breaker to the STAND-BY position.



5. If applicable, set the XR Battery Enclosure DC Disconnect Breaker to the STAND-BY position.



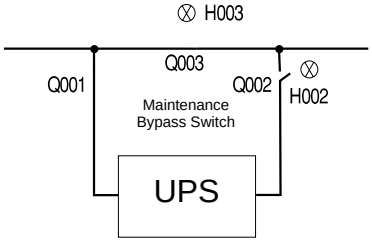
6. Open (turn OFF) the Q1 Breaker on the Maintenance Bypass Panel.



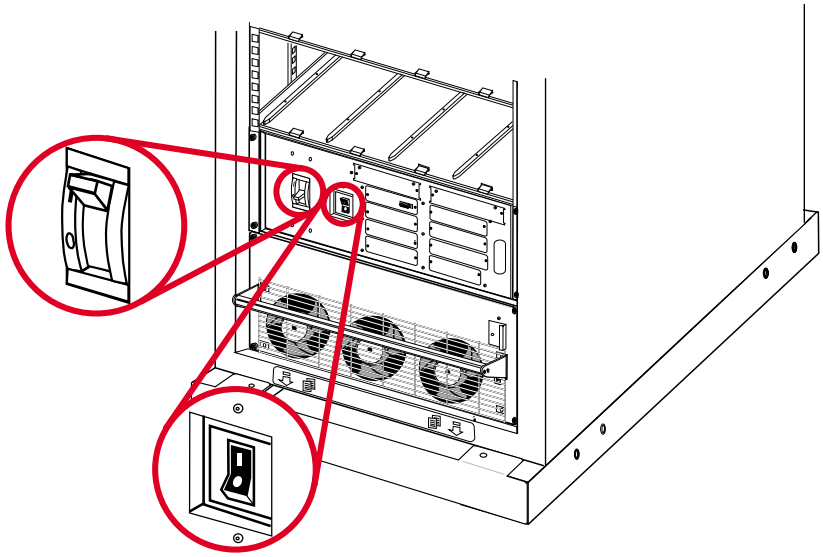

7. When steps 1 through 6 have been completed, the UPS will be in Maintenance Bypass operation.

### How to return to On-Line Operation from Manual Bypass operation

1. Close (turn ON) the Q1 Breaker on the Maintenance Bypass Panel.



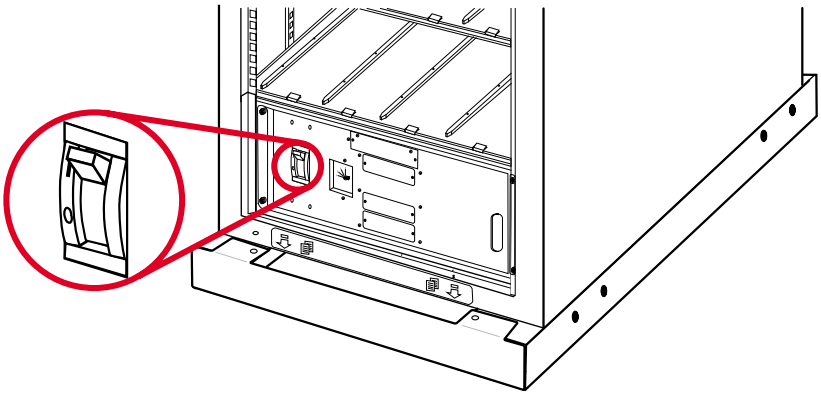
2. Set the Symmetra PX UPS DC Disconnect Breaker and System Enable Switch to the ON position.



**Note**

As soon as the DC Disconnect Breaker and the System Enable Switch are set to the ON position, the UPS transfers to Static Bypass Operation (with the load supported).

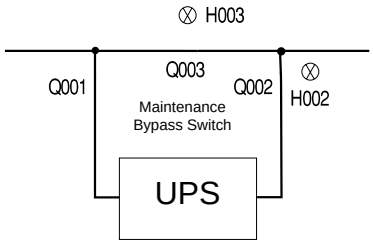
3. If applicable, set the XR Battery Enclosure DC Disconnect Breaker to ON.



**Note**

The H2 LED above the Q2 Breaker should then illuminate, indicating that it is safe to operate the Q2 Breaker.

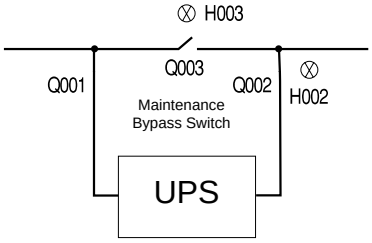
4. Close (turn ON) the Q2 Breaker on the Maintenance Bypass Panel.




**Note**

The H3 LED above the Q3 Breaker should then illuminate, indicating that it is safe to operate the Q3 Breaker.

5. Open (turn OFF) the Q3 Breaker on the Maintenance Bypass Panel.




6. As soon as the Q3 Breaker is opened, the UPS will automatically return from Static Bypass operation to On-line operation.

# Module and Card Replacement

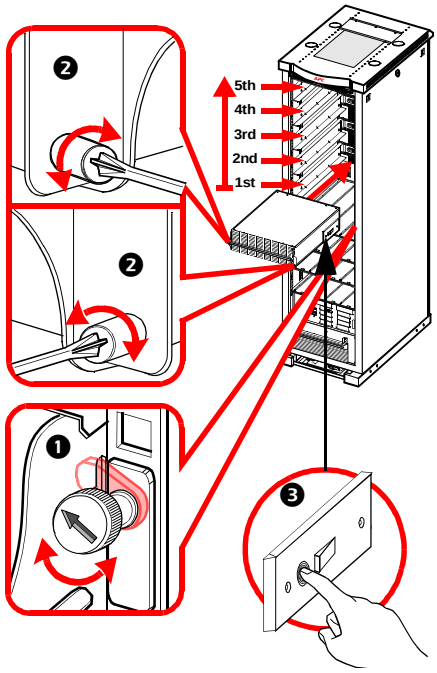
**WARNING!**

**Only trained persons familiar with the construction and operation of the equipment, as well as the electrical and mechanical hazards involved, may install and remove system components.**

**WARNING!**

**Before handling any modules in the UPS, ensure that the System Enable Switch is in the Stand-By position. See Total Power Off procedure.**

## How to replace Power Modules



❶ To de-activate the module, turn Locking Latch (with arrow pointing towards the module) counter-clockwise until it points downwards.

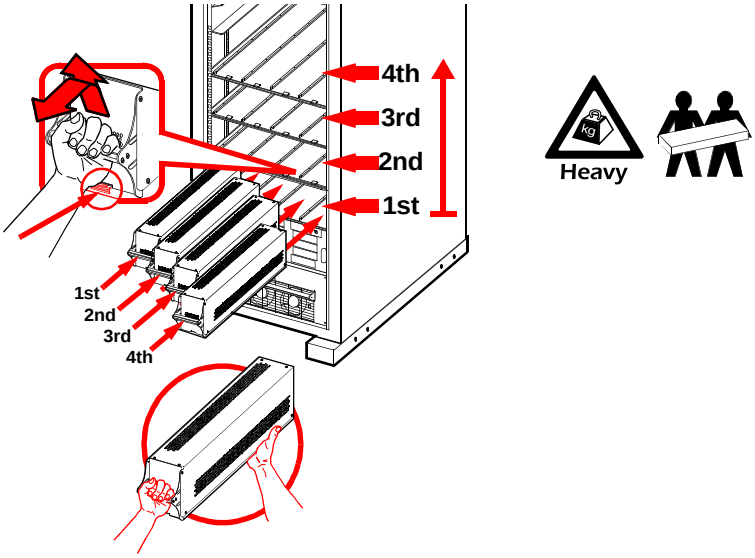
❷ Unscrew spring-activated knobs on both sides of the module until they pop out. Standing on both sides of the UPS, 2 people can now pull the module almost free of the UPS (the lock mechanism prevents the module from being pulled clear of the UPS). With the module still resting in the UPS, release the lock by pushing the black plastic tab on either side of the module.

❸ Pull out the module. Reverse procedure for installation of replacement module. Display shows message saying it has registered the new module.

Note

Power Module will not operate unless locking latch is engaged.

## How to replace Battery Units

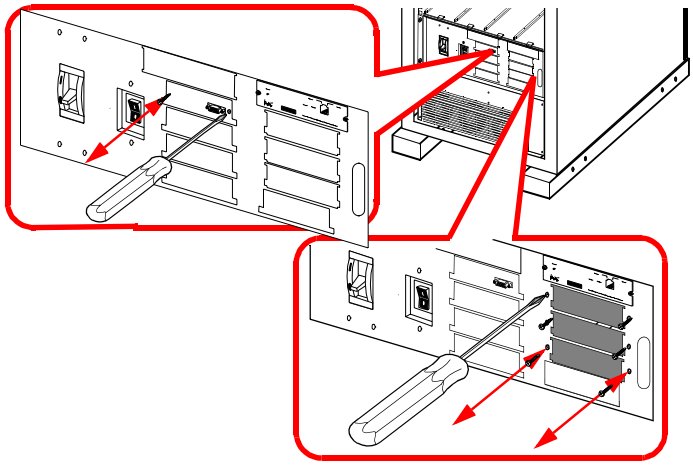



❶ Holding the handle, gently push the Battery Unit upwards and pull it halfway out of the UPS. A lock mechanism prevents it from being pulled all the way out.

❷ To release from the lock mechanism, gently push the Battery upwards again and pull out while supporting it with the other hand.

❸ Reverse procedure for installation of replacement Unit. Display shows message saying it has registered the new Unit.

## How to replace Cards



❶ Loosen the 2 Phillips screws on both sides of the Card.

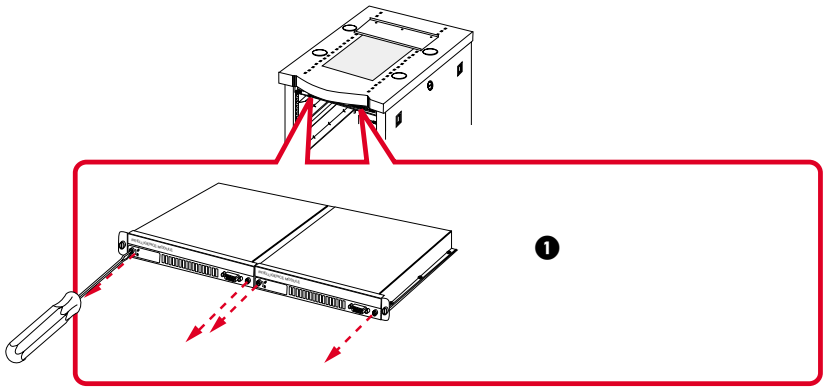
❷ Carefully pull out the Card.

❸ Reverse procedures for installation of replacement Card. Display shows message saying it has registered the new card.

## How to replace Intelligence Modules

Note

One Intelligence Module can be replaced without interrupting power to the connected equipment, provided a second Intelligence Module is installed and operational.




❶ Loosen the 2 Phillips screws on both sides of the module (top of module). As soon as the left side screw is loose, the module will be deactivated. Display shows message saying the number of Cards has been decreased.

❷ Reverse procedures for installation of replacement module.

## How to obtain replacement Modules

To obtain a replacement module, contact APC Customer Support.

1. In the event of a module failure, the display interface may display additional “fault list” screens. Press any key to scroll through these fault lists, record the information, and relay it to the customer support representative.
2. If possible, call APC Customer Support from a telephone that is within reach of the UPS display interface so that you can gather and report additional information to the representative.
3. Be prepared to provide a detailed description of the problem. A representative will help you solve the problem over the telephone, if possible, or will give you a return material authorization (RMA) number. If a module is returned to APC, this RMA number must be clearly printed on the outside of the package.
4. If the Symmetra PX UPS is within the warranty period, repairs will be performed free of charge. If it is not within the warranty period, there will be a charge for repair. Review APC ‘s warranty policy.

See section on Warranty for more information

5. If the UPS is covered by an APC service contract, have that information available and provide it to the representative.

## Replacement parts and numbers

| **Part** | **No** |
|---|---|
| 40kW Enclosure Only | SYCF40KF |
| 10kW Power Module | SYPM10KF |
| Battery Module | SYBT4 |
| Battery Unit | SYBTU1 |
| Intelligence Module | SYMIM4 |
| Symmetra PX Static Switch Module | SYSSW40KF |
| System Power Supply Card | SYCSPS |
| Display and Computer Interface Card | SYCDCI |
| Battery Monitoring Card | SYCBTMON |
| Switch Gear Monitoring Card | SYCSGMON |
| System ID Card | SYCSYSID |
| XR Communication Card | SYCXRCOM |
| Web Card, SNMP | AP9606 Web/ Management Slot Card |
| Battery Enclosure only | SYCFXR8 |

**WARNING!**

**Only trained persons familiar with the construction and operation of the equipment, and the electrical and mechanical hazards involved, may install and remove system components.**

# Troubleshooting

This section lists all of the alarm and status messages that might be displayed on the UPS display interface. A suggested corrective action is listed with each message to help you troubleshoot problems.

Note

If a problem is reported, ensure that the system component in question is correctly installed (refer to section on Module & Card Replacement).

## General status

| Display message | Meaning | Corrective action |
|---|---|---|
| Input Freq outside configured range | The input frequency to the UPS is outside the configured range. The output frequency will not synchronize with the input frequency. Normal bypass is not available. | **Option 1**: Improve the frequency of the incoming voltage. **Option 2**: Widen range of the acceptable incoming frequency using the display interface. Select Start-UP, Setup, Output, Freq Select. **Option 3**: Proceed with startup. Normal bypass is not available. |
| AC adequate for UPS but not for bypass | The UPS will function online with the input voltage, but the input voltage is not adequate to power the load in the event of Bypass Operation. | **Option 1**: Improve the incoming voltage. **Option 2**: Proceed with startup. Normal bypass is not available. |
| Low/No AC input, startup on battery | Input voltage is not adequate to start the UPS. If start-up proceeds, the UPS will function in Battery Operation. | **Option 1:** Cancel start-up until acceptable input voltage is present. **Option 2**: Continue start-up and run on battery. |
| Main Intelligence Module inserted | An Intelligence Module has been installed into the UPS. | No corrective action necessary. |
| Main Intelligence Module removed | An Intelligence Module has been removed from the UPS. | If no Intelligence Modules has been removed, check that the Intelligence Modules are properly inserted and that the fastening screws are tight. |
| Redundant Intelligence Module inserted | An Intelligence Module has been installed into the UPS. | No corrective action necessary. |
| Redundant Intelligence Module removed | An Intelligence Module has been removed from the UPS. | If no Intelligence Modules has been removed, check that the Intelligence Modules are properly inserted and that the fastening screws are tight. |
| # Batteries changed since last ON | At least one battery module has been added or removed from the UPS since the last time the Power ON command was used. | No corrective action necessary. |

| Display message | Meaning | Corrective action |
|---|---|---|
| # Pwr modules changed since last ON | At least one power module has been added or removed from the UPS since the last time the Power ON command was used. | Check that all power modules are properly inserted, the two fastening screws are tight, and the locking latches are engaged. |
| Battery Module Quantity increased | At least one Battery Module has been added to the system. | No corrective action necessary. |
| Battery Module Quantity decreased | At least one Battery Module has been removed from the system. | If no Battery Modules has been removed, ensure that all Battery Units are properly inserted. |
| Power Module Quantity increased | At least one Power Module has been added to the system | No corrective action necessary. |
| Power Module Quantity decreased | At least one Power Module has been removed from the system. | If no Power Modules has been removed, check that all power modules are properly inserted, the two fastening screws are tight, and the locking latch is engaged. |
| Battery Cabinet Quantity increased | At least one external battery cabinet has been connected to the UPS. | No corrective action necessary. |
| Battery Cabinet Quantity decreased | At least one external Battery Enclosure has been disconnected from the UPS. | Ensure that all Battery Enclosure communication cables are properly connected and that the LEDs are illuminated on the battery communication cards. |
| Low-Battery | The UPS is online and the battery charge is low. | No corrective action necessary. Note:If the input voltage fails, runtime will be limited. |
| Battery Discharged | The UPS is in battery operation and the battery charge is low. | No corrective action necessary. Note: Runtime is limited in duration. Shut down the system and the load equipment or restore incoming voltage. |
| Automatic Self Test Started | The UPS has started pre-programmed battery test. | No corrective action necessary. |
| Number of System Power Supplies Decreased | One of the system power supplies has been removed. | If no system power supplies has been removed, check that they have been properly inserted. |
| External switch gear Q001 closed | The external switch gear Q001 is closed. | No corrective action necessary. |
| External switch gear Q001 opened | The external switch gear Q001 is open. | No corrective action necessary. The UPS is disconnected from the input power. |
| External switch gear Q002 closed | The external switch gear Q002 is closed. | No corrective action necessary. |

| Display message | Meaning | Corrective action |
|---|---|---|
| External switch gear Q002 opened | The external switch gear Q002 is open. | No corrective action necessary. The load is disconnected from the UPS output. |
| External switch gear Q003 closed | The external switch gear Q003 is closed. | No corrective action necessary. The UPS is in maintenance bypass operation. |
| External switch gear Q003 opened | The external switch gear Q003 is open. | No corrective action necessary. |
| Graceful Shutdown Started | A graceful shutdown or reboot has been initiated from the display interface or other accessory. | No corrective action necessary. |
| Redundancy OK | A loss of Power Module redundancy occurred and the redundancy has been restored. Either additional modules have been installed or the load has been reduced. | No corrective action necessary. |

## General fault

| Display message | Meaning | Corrective action |
|---|---|---|
| Replace Batt(s) | One or more Battery Units need replacement | Refer to Module Replacement section for procedures. |
| The Redundant Intelligence Module Has Assumed Control | The Main Intelligence Module has failed, and the Redundant Intelligence Module is functioning as the primary Intelligence Module. | Replace the Main Intelligence Module. Refer to Module Replacement section for procedures. |
| On Battery | The UPS has transferred to battery operation as the input is not within the acceptable range. The batteries continue to discharge until the input is restored to an acceptable range. | No corrective action necessary.<br>**Note:** Runtime is limited in duration. Prepare to shut down the UPS and the load equipment or restore incoming voltage. |
| Load Shutdown From Bypass. Input Freq/Volts Out Of Range | The UPS has transferred to battery operation because the input is out of acceptable range. | Correct the input voltage problem. |
| Internal Temperature Exceeded Upper Limit | The temperature of one or more battery units has exceeded system specifications. | Ensure that the ambient temperature meets the specifications of the system. If the ambient temperature is below $104^{o}$F ($40^{o}$C), initiate a self test to detect any bad battery units. Replace any bad battery units. |
| Shutdown Due To Low Battery | The UPS was in Battery Operation and shut down the load when no more battery power was available. | No corrective action necessary. |
| No Batteries Are Connected | No battery power is available. | **Option 1**: Check that batteries are inserted properly.<br>**Option 2**: Check for DC breaker trip. |
| UPS Is Overloaded | The load exceeded the system power capacity. | **Option 1**: Decrease the load.<br>**Option 2**: If possible, add a Power Module to the system. |
| Internal Communications Failed | On of the buses used for the communication between the UPS Modules failed. | Contact APC Customer Support. See Customer Support section. |
| No Working Power Modules Found | No working Power Modules were found. | **Option 1**: Check that all power modules are properly inserted, the two fastening screws are tight, and the locking latches are engaged.<br>**Option 2**: Check for other alarm messages. |
| XR Frame Fault | One of the Battery Frames has failed. | Contact APC Customer Support. See Customer Support section. |

| Display message | Meaning | Corrective action |
|---|---|---|
| System Not Synchronized to AC Line | System cannot synchronize to AC line and bypass mode may not be available if required. | **Option 1**: Decrease the sensitivity to input frequency (select Startup, Setup, Output Freq, and select value). **Option 2**: Correct the input voltage to provide acceptable voltage on frequency. |
| Battery Voltage Is Too High | The battery voltage is too high and the charger has been deactivated. | Contact APC Customer Support. See Customer Support section. |
| Site Wiring Fault | Wrong phase rotation on the input side. | An electrician should check that the UPS has been wired properly. |
| Isolation Transformer Over-temperature | The Isolation Transformer temperature is too high. | Contact APC Customer Support. See Customer Support section. |
| External DC Disconnect Switch Tripped | The external DC disconnect switch tripped. Battery power is not available or the runtime is lower than expected. | Activate the external DC Disconnect Switch. |
| Sys Power Sply Fail | A system power supply has failed. One of the power supplies has to be changed. | Contact APC Customer Support. See Customer Support section. |
| Battmon Card Failed | The Battery Monitor Card has failed. | Refer to Module Replacement section for further details. |
| Battery Monitor Card Removed | The Battery Monitor Card has been removed. | If the battery monitor card has not been removed, check that it has been properly inserted. |
| SwGr Comm Card Fail | The Switch Gear Communications Card has failed. | Refer to Module Replacement section for further details. |
| Switch Gear Communication Card Removed | The Switch Gear Communcations Card has been removed. | If the Switch Gear Communication card has not been removed, check that it has been properly inserted. |
| Internal DC Disconnect Switch Tripped | The internal DC Disconnect Switch tripped and battery power is not available. | Activate the internal DC Disconnect Switch. |
| Static Bypass Switch Module Fault | The Static Bypass Switch module has failed. | Contact APC Customer Support. See Customer Support section. |
| System ID Card Removed | The System ID Card has been removed. | If the System ID card has not been removed, check that it has been properly inserted. |
| System ID Card Failed | The System ID Card has failed. | Refer to Module Replacement section for further details. |
| System Start Up Configuration Failed | System configuration download failed. Unable to determine system voltage and/or frame size. | Check for other alarms and contact APC customer support if problem persists. |

## Module failure

| Display message | Meaning | Corrective action |
|---|---|---|
| Battery Module Fault | A Battery Module has failed and requires replacement. | Refer to Module Replacement Section for procedures. |
| Power Module Fault | A Power Module has failed and requires replacement. | Refer to Module Replacement Section for procedures. |
| Intelligence Module Fault | The Main Intelligence Module has failed and requires replacement. | Replace the Main Intelligence Module. Refer to Module Replacement Section for procedures. |
| Redundant Intelligence Module Fault | The Redundant Intelligence Module has failed and requires replacement. | Replace the Redundant Intelligence Module. Refer to Module Replacement Section for procedures. |

## Threshold alarm

| Display message | Meaning | Corrective action |
|---|---|---|
| Redundancy Has Been Lost | The UPS no longer detects redundant power modules. One or more power module(s) have failed, or the load has increased. | **Option 1:** If possible, install additional power modules.<br>**Option 2:** Replace failed modules. Refer to Module Replacement Section for procedures.<br>**Option 3**: Reduce the load. |
| Redundancy Is Below Alarm Limit | Actual Power Module redundancy has fallen below user-specified redundancy alarm threshold. At least one Power Module has failed or the load increased. | **Option 1:** If possible, install additional Power Modules.<br>**Option 2:** Replace failed modules. Refer to Module Replacement Section for procedures.<br>**Option 3:** Reduce the load.<br>**Option 4**: Use display interface to change alarm limit. |
| Runtime Is Below Alarm Threshold | The predicted runtime is lower than the user-specified minimum runtime alarm threshold. Either the battery capacity has decreased, or the load has increased | **Option 1:** Allow the battery modules to recharge.<br>**Option 2:** If possible, increase the number of battery modules.<br>**Option 3:** Reduce load<br>**Option 4**: Decrease alarm threshold. |
| Load Power Is Above Alarm Limit | The load has exceeded the user-specified load alarm threshold | **Option 1**: Use the display interface to raise the alarm threshold.<br>**Option 2**: Reduce the load. |
| Load Is No Longer Above Alarm Threshold | The load exceeded the alarm threshold and the situation has been corrected either because the load decreased or the threshold was increased. | No corrective action necessary |

| Display message | Meaning | Corrective action |
|---|---|---|
| Min Runtime Restored | The system runtime dropped below the configured minimum and has been restored. Additional Battery Modules were installed, the existing Battery Modules were recharged, the load was reduced, or the threshold was decreased. | No corrective action necessary |

## Bypass

| Display message | Meaning | Corrective action |
|---|---|---|
| Bypass Not Available Input Freq/Volt Out Of Range | The frequency or voltage is out of acceptable range for bypass. This message occurs when the UPS is online, and indicates that the bypass mode may not be available if required. | Correct the input voltage to provide acceptable voltage or frequency. |
| UPS In Bypass Due To Fault | The UPS has transferred to Bypass Mode because a fault has occurred. | Contact APC Customer Support (see rear cover). |
| UPS In Bypass Due To Overload | The load exceeded the system power capacity. The UPS has switched to Bypass Mode. | **Option 1:** Decrease the load.<br>**Option 2:** If possible, add a power module to the system. |
| UPS In Maintenance Bypass | The system is in maintenance bypass: Q002 is open and Q003 is closed. | No corrective action necessary. |
| UPS In Forced Bypass State | The system has been forced into Maintenance Bypass Operation: Q003 is closed and/or Manual Bypass Switch is activated. | No corrective action necessary. |
| Static Bypass Switch Module Removed | The Static Bypass Switch has been removed. | If a static Bypass Switch has not been removed, check that it has been properly inserted. |

If the system works in bypass, ensure the presence of AC mains supply input.

If a problem persists, note UPS model #, serial #, and date purchased before calling APC Customer Support (see rear cover).

# System Re-Start (if applicable)

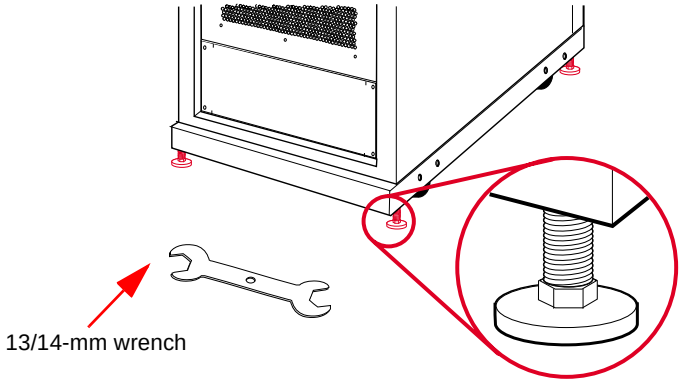
System start-up is included with your system. If you have to move your system to a new location and need a new start-up, remove all power modules and follow the Total Power Off procedure. Raise the stabilizing feet.

### Secure the UPS by setting the stabilizing feet

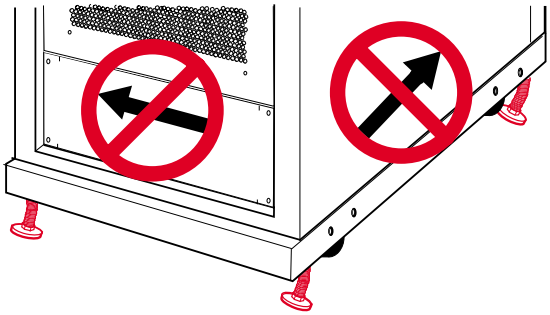
After the electrical wiring has been completed, secure the UPS in its final operating position. Use a 13/14-mm wrench (shipped with UPS) to adjust all 4 stabilizing feet until pads make solid contact with the floor.

### Level the UPS (recommended)

Adjust stabilizing feet to level from front to back and left to right.




**CAUTION!**
Do not move the UPS after the stabilizing feet have been lowered, or equipment damage may occur.



# Module Installation

**WARNING!**

**Only APC-trained personnel familiar with the construction and operation of the equipment, and the electrical and mechanical hazards involved, may install and remove system components.**

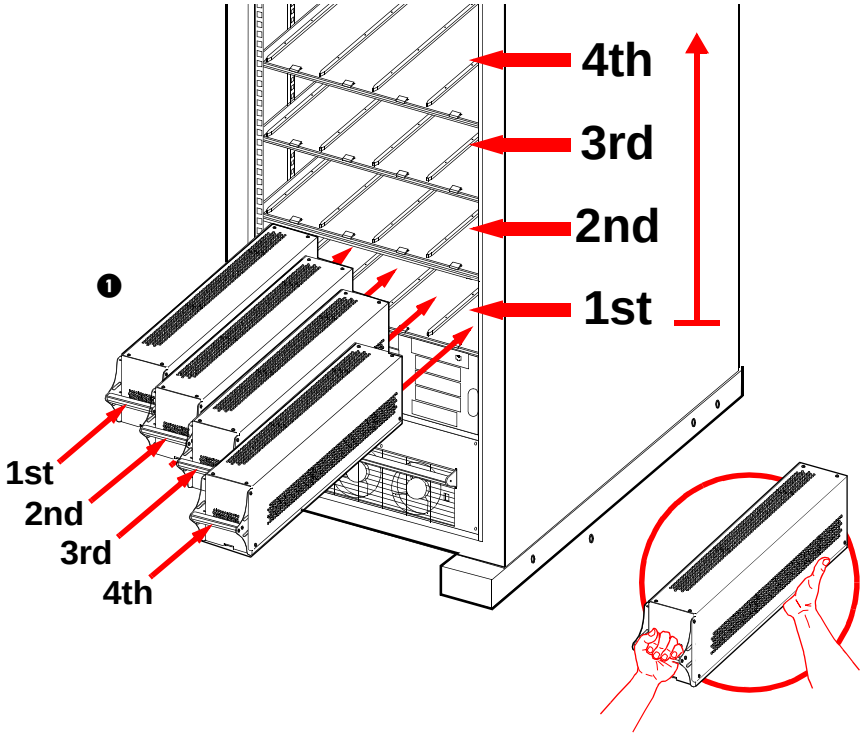
**CAUTION!**

Before installing any modules in the UPS, ensure that the System Enable Switch is left in the STAND-BY position (if not, see Total Power OFF procedure).

Note

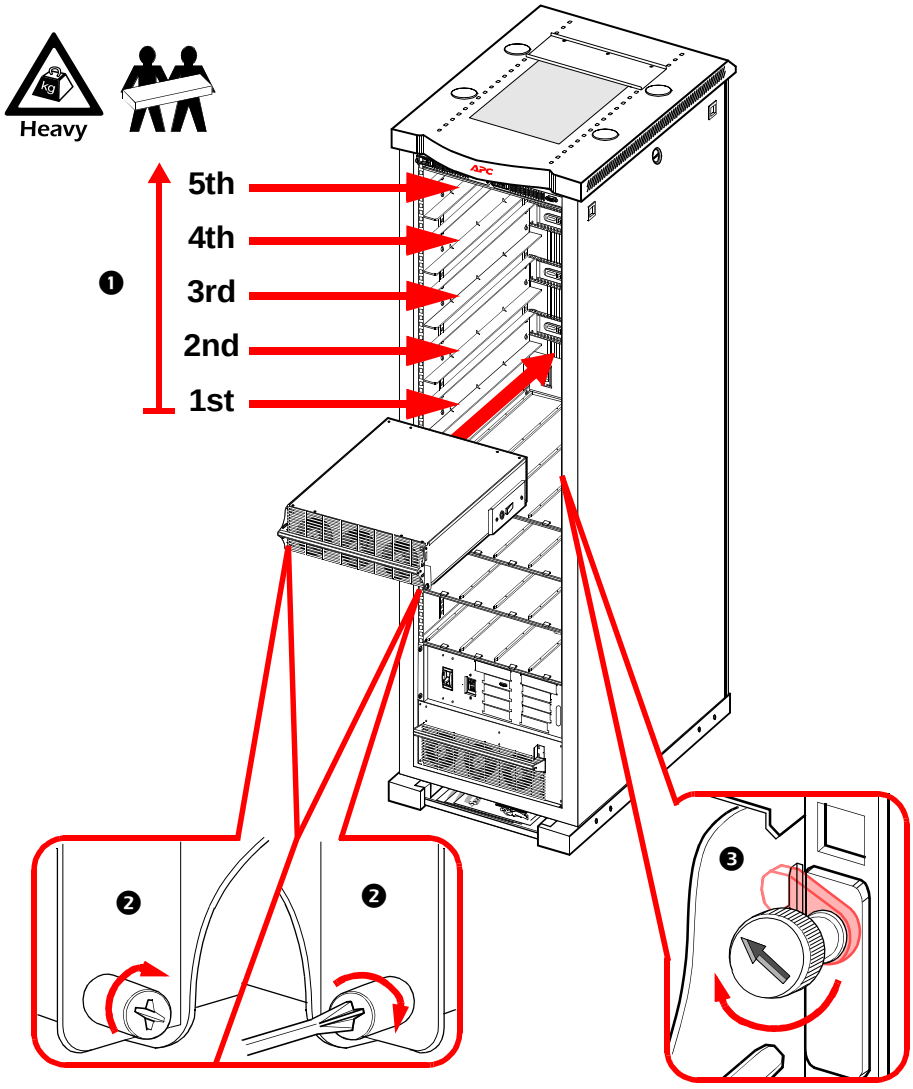
At least 1 Battery Module (4 Battery Units) is required in the Battery Enclosure and the DC Breaker must be on to start up the system. If using value-line battery cabinets, the battery configuration will need to be entered manually through the display.

### Battery Module installation




❶ Install Battery Units in the lowest available bay, 4 across. Position the Battery Unit to slide in between the grooves. Push completely into the UPS to ensure connection.

## Power Module installation and securing




❶ Install Power Modules in the top 5 shelves, starting from the lowest available bay. Push completely into the UPS.

❷ Fasten screws using a screwdriver.

❸ Engage Locking Latch. Turn knob on right hand side of the UPS clockwise until arrow faces module.

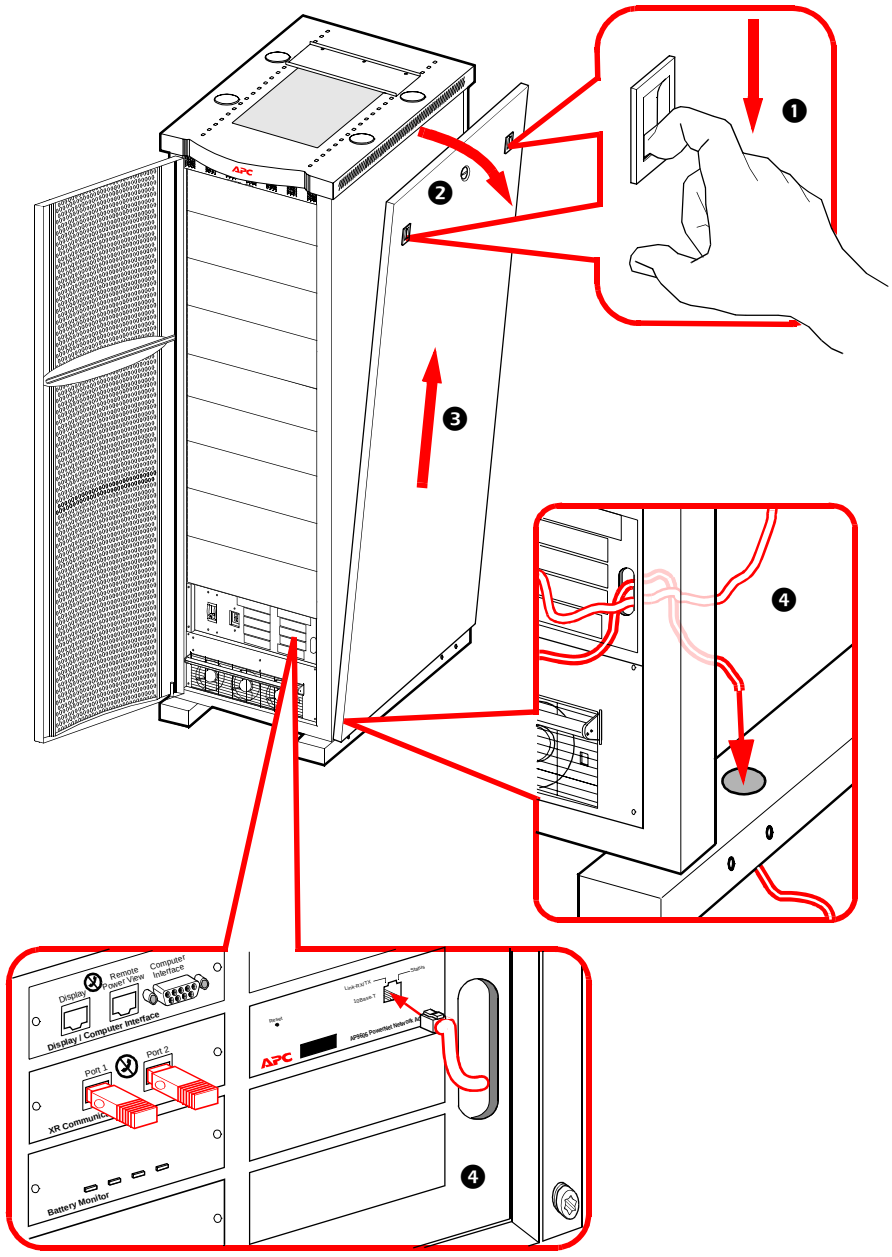
**Note**

The Power Module will not start unless the Locking Latch is engaged.
After installation and securing of the Power Modules, make sure that the locking latch on the Bypass Static Switch Module is engaged.

## Connecting communication cables

Note

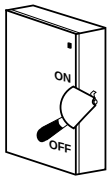
Use standard Cat 5 data cable of required length (not supplied).




Note

If your UPS has been installed between devices and side panels cannot be removed the Bypass Static Switch Module can be removed to gain access.

# System Re-Start Procedure

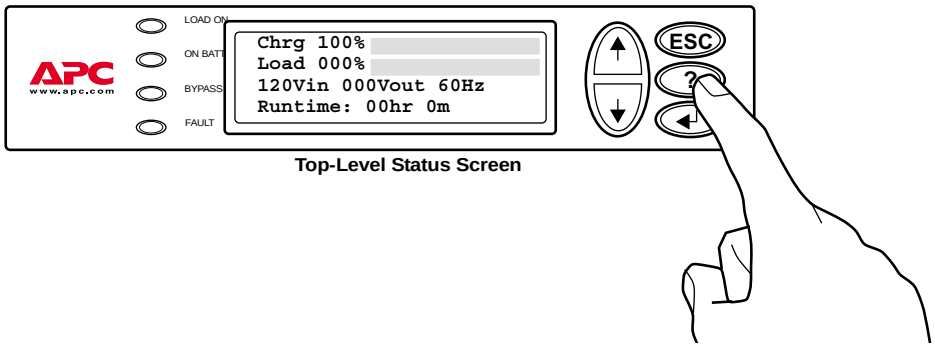
| ❶ Utility Power ON | ❷ Battery Enclosure Switch ON | ❸ System Enable Switch ON |
|---|---|---|
|  | | |



**Note**

Wait approximately 30 seconds for system to boot up. Display will show a fault if Power Module Locking Latch is not engaged.

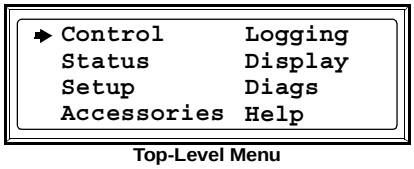
❹ Press ESC until you get to the **Top-Level Status Screen**, which provides you with basic system status information.





**Top-Level Status Screen**

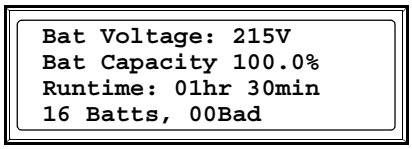
❺ Press **Enter** to open the **Top-Level Menu** screen. This screen is the **launching pad** to command, configure, and monitor the system.





**Top-Level Menu**

❻ Press the down key and then the enter key to select Status. Verify that all power, battery and intelligence modules are detected by the system and are functioning correctly by scrolling down and reviewing all status screens. Please note that the intelligence modules are monitored under the “Miscellaneous” Status Screen (submenu under Status).

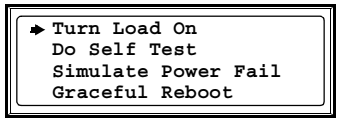



**Typical Status Screen**

**Note**

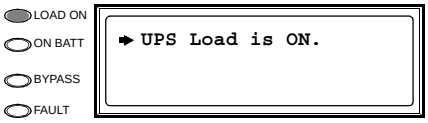
If a problem is reported, ensure that the system component in question is correctly installed. If the problem persists, refer to Basic Troubleshooting.

❼ From the Control Menu, choose **Turn Load On.**




**Control Menu Screen**

Load On LED should now be lit.

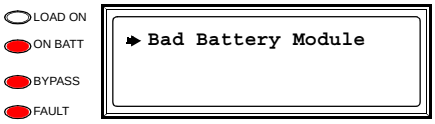



**Confirm Menu Screen**

**Note**

The UPS is now ready to support the load equipment.

If On Batt, Fault or Bypass LED is on, refer to Troubleshooting section.




**Fault Screen**

# Life support policy

American Power Conversion Corporation (APC) and its affiliates and subsidiaries worldwide do not recommend the use of any of their products in life-support applications where failure or malfunction of the APC product can be reasonably expected to cause failure of the life-support device or to significantly affect its safety or effectiveness. APC does not permit the use of any of its products in direct patient care. APC will not knowingly sell its products for use in such applications unless the life-support system or direct patient care device is part of a whole facility/building into which the UPS is integrated, and unless APC receives, in writing, assurances satisfactory to APC that:

a. The UPS system will be configured in a manner that will provide N+1 power redundancy to the critical load,

b. The end-user customer assumes all risks and signs the *APC System Configuration and Use Form*, and

c. The customer and operators of the APC UPS system agree to indemnify and hold APC and its affiliates and subsidiaries harmless for any and all claims arising out of the systems use in such applications.

Examples of life-support devices include, but are not limited to, neonatal oxygen analyzers, nerve stimulators (whether used for anaesthesia, pain relief, or other purposes), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anaesthesia ventilators, infusion pumps, and any other device designated as “critical” by the U.S.F.D.A.

Hospital-grade wiring devices and leakage current may be ordered as options on many APC UPS systems. APC does not claim that units with this modification are certified or listed as hospital-grade by APC or any other organization. Therefore, these units do not meet the requirements for use in direct patient care.

# Warranty Statement

## LIMITED PRODUCT WARRANTY FOR APC PRODUCTS

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### APC product covered

Symmetra PX UPS

### Terms of warranty

APC warrants that the Product shall be free from defects in materials and workmanship, for a period of two (2) years from the date of start-up when APC authorized service personnel has performed the start-up of the Product. In the event that the Product fails to meet the foregoing warranty, APC shall repair or replace any defective parts. Any parts furnished under this warranty may be new or factory remanufactured.

### Warranty extends to first purchaser for use, non-transferable

This Warranty is extended to the first person, firm, association or corporation for whom the APC Product specified herein (herein referred to as “You or Your”.) This Warranty is not transferable or assignable without the prior written permission of APC.

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### Parts

- APC warrants the parts of their systems for 2 years. This warranty only covers the cost of the part and not the labor for installation.
- Calls for warranty parts requests need to have specific unit information (serial number, model number, job number) to allow proper identification and processing of the warranty part transaction.
- A purchase order may be required to issue a warranty part(s). An invoice will be sent once the part(s) are shipped to the field. You have 30 days to return the part back to APC. After 30 days, the warranty invoice will be outstanding and payment of the invoice will be expected in full.
- Return authorization documentation will be sent with the replacement part. This documentation must be sent back with the defective part to APC for proper identification of the warranty return. Mark the warranty return number on the outside of the package.
- After the part has been received at APC, we will determine the status of the credit based on the findings of the returned part. Parts that are damaged from: lack of maintenance, mis-application, improper installation, shipping damage, and acts of man/nature will not be covered under the parts warranty.
- Any warranty parts request received before 1:00 PM EST will be shipped same day standard ground delivery. Any costs associated with Next Day or Airfreight will be the responsibility of the party requesting the part.
- Return freight of warranty parts to APC is the responsibility of the party requesting the part.

To request warranty parts, please contact APC Customer Support.

# APC Worldwide Customer Support

Customer support for this or any other APC product is available at no charge in any of the following ways:

- Visit the APC Web site to find answers to frequently asked questions (FAQs), to access documents in the APC Knowledge Base, and to submit customer support requests.
  - **www.apc.com** (Corporate Headquarters)
    Connect to localized APC Web sites for specific countries, each of which provides customer support information.
  - **www.apc.com/support/**
    Global support with FAQs, knowledge base, and e-support.
- Contact an APC Customer Support center by telephone or e-mail.
  - Regional centers:

| | |
|---|---|
| APC headquarters U.S., Canada | (1) (800) 800-4272 (toll free) |
| Latin America | (1) (401) 789-5735 (USA) |
| Europe, Middle East, Africa | (353) (91) 702020 (Ireland) |
| Japan | (0) 3 5434-2021 |

  - Local, country-specific centers: go to www.apc.com/support/contact for contact information.

Contact the APC representative or other distributor from whom you purchased your APC product for information on how to obtain local customer support.

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